



**BUSINESS COUNCIL FOR
SUSTAINABLE DEVELOPMENT
UNITED KINGDOM**



Business Response To The UK Government Sustainable Development Strategy Review

A joint response from two not-for-profit business networks which have a major focus on sustainable development –

Business Council for Sustainable Development – United Kingdom (BCSD-UK)
and the

**Midlands Environmental Business Company
(MEBC)**

July 2004

1. This response is in the form of good news and bad news based on case study evidence from the business community.
2. Two organisations have collaborated in the response, the national Business Council for Sustainable Development – United Kingdom, and the predominantly West Midlands regional Midlands Environmental Business Company.

BCSD-UK is an independent, not-for-profit business. It is the UK's officially affiliated branch of the World Business Council for Sustainable Development. It is an information, knowledge, experience, and business opportunity exchange network of businesses from a wide range of sectors including, for example, pharmaceuticals, broadcasting, oil exploration and production, water supply, build and construction, cement, paper production, property development, law, exhibition management, waste management, chemicals and plastic production and recycling, energy, brewing, steel, water management and provision, etc. The Management Committee consists of representatives from Arup; BP; ConocoPhillips; Corus; Deloitte; Eversheds; Inchferry Consulting; Lafarge; North Lincolnshire Council; Shell U.K. Exploration and Production; UPM Kymmene; WSP Environmental.

Midlands Environmental Business Company is the corporate custodian of the Midlands Environmental Business Network (originally Midlands Environmental Business Club). Established in 1991, MEBC is committed to promoting the values of sustainable development (the amalgam of four sets of values – economic growth, social responsibility, environmental protection and the prudent use of non-renewable resources) as being good for businesses and stimulating significant business opportunity. MEBC is the strategic partner of Advantage West Midlands for the environmental technology sector within the Regional Economic Strategy.

3. A multi-sectored business group response will inevitably show that individual businesses and sectors are not always in total harmony with one another on what works and what does not work in terms of sustainability. However, the common ground of agreement between all the companies represented within this report is their commitment to the overall values of sustainable development. The unique benefit of this response is that it is based on the practical experience of businesses concerned with, and striving to, deliver those values.
4. The case studies have been contributed by businesses directly to this survey, or have been extracted from their contributions to other initiatives such as the BCSD-UK "Barriers To Waste Re-use" portfolio of case studies and the National Industrial Symbiosis Programme that involves both networks. The survey is, therefore, a compilation of unedited contributions from individual businesses and the case studies is very much in their individual language.

5. Summary findings from response:

- a. As evident from the case studies, the business community is engaged in a wide variety of activity that is successfully delivering the values of sustainable development**
- b. Whilst government and business share the same aspiration in delivering sustainable development values, case study evidence shows that operationally this is too frequently thwarted by a serious array of barriers ranging from lack of government practical leadership, inappropriate and badly or inconsistently policed regulations, over-complex and bureaucratic support mechanisms including funding, and too greater an emphasis on stick penalties rather than carrot incentives.**
- c. There is still not enough government encouragement to encourage the view that waste is a resource.**
- d. There is a need to gain widespread public understanding and "buy in" to sustainable development**
- e. The implication of public procurement based on real sustainable development values would have an enormous impact on the market and its values and on the supply sides willingness to invest in capability and capacity to respond.**

6. Evidence from case studies is divided into two categories – good news and bad news.

Good news from case studies:

1. The development of a novel technology to process and utilise waste vegetable oil for biodeisel
2. Maximising the capacity of a waste water treatment facility
3. Making good business sense of Corporate Social Responsibility (CSR)
4. Software developed by the pharmaceutical industry to enable researchers to quickly evaluate the relative environmental merits of different synthetic routes.
5. Waste sulphuric acid to usable gypsum
6. Much more attention being paid by developers to environmental issues
7. Scampi shells now being incinerated in the Highlands as an alternative to transportation to France for conversion to bouillon.
8. Businesses and government agencies co-operating to investigate viability of major recycling of 25 litre plastic drums
9. Development of an education programme in the Herefordshire area to develop understanding of sustainable land use
10. Project Carrot – an example of best practice in sustainable land use.
11. Brewery use of biogas from effluent treatment works to substitute the use of natural gas.
12. A number of breweries using biogas from effluent treatment works to substitute the use of natural gas. This is expanding in order to reduce water disposal costs and increase the use of a renewable energy source
13. A biomass electricity generation plant proposed at a brewery to provide all site electricity and all fuel material will be transported to the site by rail
14. The potential to use hundreds of tons of recycled PET rather than HiPS if supply of this stream can be guaranteed in the UK
15. Concrete recycling – from washing machines to building materials
16. The use of an inert fill tip for housing development around existing fishing lakes
17. A 325KW wood chip fuelled boiler being installed to provide heating for Oakengates swimming pool and leisure centre in Telford, Shropshire
18. A solution for a pipeline to cross an A-road designed to use ponds rather than oversized pipes to ensure the discharge to the watercourse was within the site boundary
19. Local authority and private sector in partnership seeking to achieve sustainable development outputs
20. The development of a large, modern, high-quality waste transfer station to process 100,000 tonnes of used tyres per annum.
21. A novel recycling solution for incinerated bone ash
22. The reuse of uncontaminated clay fill
23. The use of Exemption 9 – “ecological improvement”

Bad news from case studies:

1. Government:
 - is not making realistic links between Climate Change and the cringing refusal to adjust fuel prices in a realistic timeframe
 - is ignoring the fact that fuel prices are the same in real terms as 1972 yet public transport fare structures - at least on buses - have risen 56% over the same period
 - is not anticipating the shortfall of hazardous waste and other capacity by changing the protocols for Cement Kiln and (possibly) Power stations
 - is failing to lead on the air fuel debate in Europe
 - is taking little overt action to develop a National Resource Flow Database or associated standards for proprietary systems interconnectivity with the Regulator
 - is failing to integrate WCAs and WDAs to accelerate delays in managing Municipal Waste
 - is maintaining contradictory standards on Producer Responsibility in relation to Traded Pollution Permits and targets between Packaging/Tyres/WEEE etc
 - has a poor track record of transposition of EU Regs and associated RIAs
 - has wasted regulatory effort which has funded criminal elements entering the waste processing area (fridges eg)
 - has via the Treasury a reluctance to price Landfill at a rate which threatens their income stream
 - has inertia within the regulatory regime.
 - has excessive and overly burdensome regulation
 - does not do anything about the lack of a level playing field with other EU countries

2. the complexity and bureaucracy of support funding regimes
3. a lack of a clear definition of precisely what a waste stream is under UK regulations
4. the result of a material being classified as waste means it has lost £25/tonne in value and is therefore no longer commercially viable
5. the need for DEFRA to review the "rules", which are inflexible and often detrimental and often enforced with insufficient consideration of the environment as a whole
6. A need for the EA to take a more pragmatic and holistic look at how they enforce the rules
7. A need for the EA to improve the environment not just to enforce the rules
8. A need for recognition that the waste management industry has different objectives than the rest of industry
9. Lack of support from the regional development agency in getting approval for a feasibility wind turbine mast to be installed at a brewery site
10. Significant Planning and Waste Management Licensing delays
11. By taking a prescriptive approach rather than requiring a management system, the regulations make it difficult to change processes. They encourage the use of "safe" technologies, i.e. ones the regulators have seen before, and discourage support for "risky" chemistries and technologies that might allow progress towards sustainability
12. Current regulations create impediments to re-use of "wastes" as raw materials in other processes because of concerns about quality. There is a need to re-focus the regulatory system on product specifications rather than process specifications to allow greater innovation in process design
13. The Substitute Fuels Protocol (SFP) establishes high barriers to waste reuse that apply only to the cement industry
14. Biodiversity is generally poorly understood - saving the odd butterfly habitat is just a PR exercise
15. The construction industry is transparently recycling more demolition waste now than even a year or two ago. However, one hurdle inhibiting even greater recycling is the storage and transportation of waste material from one site to another
16. In total, 45% of Scotland's sludge is converted into 52,000 tonnes of fuel, which in turn generates 100,000 MWh of electricity at Longannet – enough to supply 30,000 homes each year. In the process, some 40,000 tonnes of coal reserves are conserved annually. If WDF is deemed a 'waste' then its combustion at Longannet would fall under the terms of the Waste Incineration Directive (WID). The emission limits applying to waste incinerators are very stringent and are not capable of being met by any coal fired power station in the UK.
17. The investment of £8m in a state-of-the-art recovery operation aims to further develop power station ash sales. Despite the substantial use of coal ash in a variety of markets over many years, and no evidence of harm being caused to health or the environment, in determining coal ash sales to be 'transfers of waste' the Environment Agency is already impacting on ash sales in England and Wales and could make recovery unviable.
18. Branding valuable construction materials as 'wastes' will also harm *perceptions* of the material by the construction industry and their customers.
19. Support funding is too complex, too bureaucratic, too slow and often managed incompetently, with its weaknesses compromising the effectiveness of the very things it was intended to support.
20. Inconsistent and conflicting policy and controls on the composting industry as a result of different perspectives from Government departments eg. DEFRA and FSA.
21. A lack of scientific objectivity and inconsistency in the regulators and development agencies
22. Inconsistency and variable interpretation of waste definitions by the EA and local authorities.
23. The adverse rating of the waste and environmental services sector by financial analysts does not encourage investment in essential infrastructure in the UK.
24. lack of focussed and accountable public funding for recycling schemes and projects, particularly in support of markets. WRAP should stimulate and sustain such markets but its direction and focus needs to be transparent, co-ordinated and appropriate.
25. There are serious gaps in the knowledge of the sources, pathways and treatment of wastes from a number of sectors including agriculture, electronics, electrical and white goods, contaminated soil and liquid waste.
26. The failure to respond to the Landfill Directive in a timely or constructive manner.
27. Inconsistency between what is defined as 'domestic' waste and hazardous waste.
28. Conflicting issues between environmental and sustainable development policy and parallel regulatory regimes.
29. There is a general lack of financial incentive.
30. A major challenge to both public sector and private sectors is that they are still wedded to lowest capital cost, and ignoring whole life costs when assessing tenders. This stifles innovation and sustainable design.
31. There is an inconsistent approach – what is deemed to be an acceptable use of an exemption, or an interpretation of the statute in one area, may not necessarily be agreed by another region.

32. There is indecisiveness - a lack of willingness for Agency officers to apply commonsense to situations, which the current Regulations were clearly not intended to control. This may be because of a lack of experience and management talent within the Environment Agency.
33. There is a lack of awareness of general principles of sustainability – a number of the solutions that have been proposed have considered wider environmental and sustainability arguments (e.g. numbers of lorry movements required to export and import materials). There appears to be little or no appreciation of significance of such issues at a “Grassroots” level.
34. There is commercial naivety – whilst it is not the Agency’s role to consider the commercial aspects of a given approach, there is often a complete lack of awareness of the commercial aspects of their actions and decisions, which can render sites commercially unviable and hence undevelopable. This can lead to the prolongation of potential environmental impairment as sites continue to remain in a derelict and contaminated condition.

7. The participating organisations and headlines of their contributions:

Ref No	Company	✓ or -	Case study	BCSD-UK or MEBC
1	Biffa Waste	-	Areas where Government commitment must be questioned (in no particular order)	BCSD-UK and MEBC member
2	British Cement Association	-	Excessive and overly burdensome regulation	Extracted contribution from the BCSD-UK “Barriers to Waste Reuse” portfolio
3	British Industrial Plastics BCSD-UK member	✓	Biodiesel production	A good news case study from the BCSD-UK/MEBC National Industrial Symbiosis Programme – West Midlands
4	British Industrial Plastics BCSD-UK member	✓	Maximising the capacity of a waste water treatment facility	A good news case study from the BCSD-UK/MEBC National Industrial Symbiosis Programme – West Midlands
5	British Industrial Plastics BCSD-UK member	-	Lack of a clear definition of precisely what a waste stream is under UK regulations	Extracted contribution from the BCSD-UK “Barriers to Waste Reuse” portfolio
6	Coors BCSD-UK member	-	Special Waste Regulations 1996 (as amended) & the Transport of Waste	Extracted contribution from the BCSD-UK “Barriers to Waste Reuse” portfolio
7	Corus BCSD-UK member	-	The Classification of By-Products as Waste	Extracted contribution from the BCSD-UK “Barriers to Waste Reuse” portfolio

8	Deloitte BCSD-UK member	✓	Corporate Social Responsibility (CSR) makes good business sense.	BCSD-UK member
9	Environmental Business Communications	-	Bureaucracy and funding regimes	EBC provides management services for the BCSD-UK and the MEBC
10	Glacier ARM BCSD-UK member	-	Regulation Implementation delays and generally unclear Policy-making process	Extracted contribution from the BCSD-UK "Barriers to Waste Reuse" portfolio
11	GlaxoSmithKline BCSD-UK member	✓ -	Sustainable Development in the Pharmaceutical Context	BCSD-UK member
12	Huntsman Tiioxide/Knauf UK gmbh	✓	Waste sulphuric acid to usable gypsum	A good news case study from the BCSD-UK National Industrial Symbiosis Programme
13	Lafarge Cement UK (formerly Blue Circle) BCSD-UK member	-	The Substitute Fuels Protocol (SFP) establishes high barriers to waste reuse	Extracted contribution from the BCSD-UK "Barriers to Waste Reuse" portfolio
14	Land Securities	✓ -	Developers and sustainable development	BCSD-UK member
15	Land Securities	-	Storage and transportation of waste material from one site to another inhibits recycling	Extracted contribution from the BCSD-UK "Barriers to Waste Reuse" portfolio
16	North East Incineration Services; Fastnet (Highlands) Ltd	✓	Scampi shells can now be incinerated in the Highlands as an alternative to transportation to France for conversion to bouillon.	A good news case study from the BCSD-UK Scottish Industrial Symbiosis Programme
17	Rohm and Haas Electronic Materials Europe Ltd & Delleve Plastics Ltd	✓	Recycling of 25 litre plastic drums	A good news case study from the BCSD-UK/MEBC National Industrial Symbiosis Programme – West Midlands
18	Scottish & Newcastle	✓ -	Brewery Examples of Sustainable Development in practice.	BCSD-UK member
19	ScottishPower	-	Classification and transfers of waste	Extracted contribution from the BCSD-UK "Barriers to Waste Reuse" portfolio
20	Severn Trent Water	-	A water company is under a statutory obligation to deliver good wholesome water. The definition of acceptability of water quality is largely dependent on the interpretation of environmental legislation by the relevant regulators.	MEBC Member

21	Sony	✓	The potential to use hundreds of tons of recycled PET rather than HiPS if supply of this stream can be guaranteed in the UK.	Extracted contribution from the BCSD-UK “Barriers to Waste Reuse” portfolio
22	Stuart Guy Consulting	✓ -	Successes and Failures in redevelopment of potentially contaminating sites.	MEBC member
23	Telford & Wrekin Council, Econergy Ltd, Stanhope Recycling, Marches Wood Energy Network	✓	Wood Fuelled Heating at Oakengates Leisure Centre	A good news case study from the BCSD-UK/MEBC National Industrial Symbiosis Programme – West Midlands
24	The Sims Group & Marley Building Materials	✓	Concrete recycling	A good news case study from the BCSD-UK/MEBC National Industrial Symbiosis Programme – West Midlands
25	Veolia Water Industrial Outsourcing	-	Barriers to waste reuse	Extracted contribution from the BCSD-UK “Barriers to Waste Reuse” portfolio
26	Wardell Armstrong	✓ -	The Morton Palms Enabling Infrastructure Contract – case study.	MEBC member
27	Warwickshire/Arup Partnership	✓ -	Sustainability in Local Authority	MEBC and BCSD-UK member
28	Waste Tyre Solutions & Sapphire Energy	✓	Waste to energy – tackling the UK’s waste tyre problem	A good news case study from the BCSD-UK/MEBC National Industrial Symbiosis Programme – West Midlands
29	WindSupply	✓ -	Developing a UK supply chain for the emerging renewable energies manufacturing industry	A BCSD-UK led initiative
30	WRE Services Ltd & Akristos	✓	A novel recycling solution for incinerated bone ash	A good news case study from the BCSD-UK/MEBC National Industrial Symbiosis Programme – West Midlands
31	WSP	✓ -	Reuse of uncontaminated clay fill, Use of Exemption 9, and Observations on the Environment Agency	Linked to BCSD-UK NISP project

8.1 Areas where one must question Government commitment (in no particular order)

Biffa Waste

BCSD-UK and MEBC member

- Making realistic links between Climate Change and the cringing refusal to adjust fuel prices in a realistic timeframe
- Ignoring the fact that fuel prices are the same in real terms as 1972 yet public transport fare structures-at least on buses-have risen 56% over the same period
- Not anticipating the shortfall of hazardous waste and other capacity by changing the protocols for cement kiln and (possibly)power stations
- Failing to lead on the air fuel debate in Europe
- Taking little overt action to develop a national resource flow database or associated standards for proprietary systems interconnectivity with the Regulator
- Failing to integrate WCAs and WDAs to accelerate delays in managing municipal waste
- Contradictory standards on Producer Responsibility in relation to Traded Pollution Permits and targets between Packaging/Tyres/WEEE etc
- Poor track record of transposition of EU Regs and associated RIAs
- Wasted regulatory effort which has funded criminal elements entering the waste processing area(refridges eg)
- Treasury reluctance to price Landfill at a rate which threatens their income stream
- A specialist licensed contractor needed to carry waste across a 30-year road from one part of a company to another.

8.2: Excessive and overly burdensome regulation

British Cement Association

BCSD-UK member

Extracted contribution from the BCSD-UK “Barriers to Waste Reuse” portfolio

The management of waste within the UK will change significantly over the next few years, primarily as a consequence of developments in waste management legislation arising from the EU. The cement industry forms an important part of the solution to current problems, having 15 existing plants nationwide with the potential, even in the short term, to treat 1.26M to 1.51M tones of waste annually. The use of waste-derived fuels in cement kilns is accompanied by a number of environmental benefits, but these advantages and the extensive experience within UK cement companies and their European partners cannot be fully realised due to the substantial inertia within the regulatory regime.

The ability to utilise the industry’s capability, and to consider other innovative solutions to the UK’s waste management problem is being hampered by excessive and overly burdensome regulation that is not applied to cement makers in other EU countries nor to other industries in the UK: Substitute Fuels Protocol (SFP) is the prime example. The impact of this is to:

- (i) Delay the development of a long-term solution to the treatment of the UK’s waste problem;
- (ii) Delay the delivery of significant environmental benefits;
- (iii) Threaten future investment in the UK cement industry by European parent companies

Further, the taxation of waste-derived fuels (Substitute Liquid Fuels) has the effect of pushing certain wastes *down* the waste hierarchy. There is a significant disparity between the UK and the rest of Europe.

Many EU Member States take advantage of the capacity within their own domestic cement industry, and complying with the same EU environmental legislation as the UK, achieve far more efficient and effective recovery of these waste-derived fuels, whilst retaining sound environmental control. The use of waste-derived fuel in the UK is merely 6% compared with the European average of 12%, France and Germany 30-40%, and 50% in Belgium.

To realise the industry’s potential, a more efficient process for granting PPC and WID authorizations for using fuels is required urgently, replacing the rigid extra-statutory SFP (that works against environmental best practice) with a permitting process that reflects the considerable experience gained across Europe is required. The industry has been lobbying for modification of the SFP and are pleased that a revision has recently been issued for consultation.

8.3: Biodiesel production
British Industrial Plastics and
A good news case study from the BCSD-UK/MEBC National Industrial Symbiosis Programme – West Midlands

In response to a declining UK market and a changing customer base for traditional products West Midlands chemical company British Industrial Plastics Ltd (BIP) faced a serious downturn in 2004 following the termination of a major manufacturing contract. The company therefore needed to identify new opportunities, ideally for the UK market, and began examining the market opportunities for a wide range of new products developed by its Research and Development team. In light of the proven commercial success of biodiesel manufacturing on the continent, the potential for BIP to become the first UK supplier was realised in 2002.

The company had spare capacity, licensed plant and site, a wealth of technical and production experience and the infrastructure to handle and process the raw materials, including large volumes of methanol. However, because using the conventional virgin rapeseed oil favoured on the continent would not be viable commercially in the UK, BIP developed a novel technology and process to utilise waste vegetable oil. This production supports future changes in legislation prohibiting the reuse of vegetable oil in animal feed and fitted in with BIP's strategy of developing renewable resources and technology for recycling in the UK. However, what BIP did not have was a confirmed source of waste vegetable oil and a route to market biodiesel given that the end product would have to be a blend with ultra low sulphur diesel. Through the NISP programme BIP was put in contact with Rix Biodiesel Ltd, a Humberside based independent fuel distribution and retail company that was experiencing the converse of this situation. Rix had identified sources of waste vegetable oil and had a route to market through its fuel distribution business, yet lacked the necessary plant and publicly stated its intention to invest £10 million to build one.

Initially this process was not viable commercially; however, the Chancellor of the Exchequer introduced a tax reduction in the Finance Act 2002 for green renewable fuel sources. Following changes in the tax regime BIP began producing small-scale commercial volumes in July 2002, for Rix's distribution network. With the success of these trials BIP converted one of its plants to manufacture biodiesel and last year converted 15 million litres of waste vegetable oil into biodiesel. This year BIP intends to increase capacity and currently has a license from the Environment Agency to produce 50 million litres (45,000 tonnes) of biodiesel per annum.

Rix and BIP signed a long-term supply contract in early 2003. The project has saved 25 production related jobs at BIP and has currently created two full time positions at Rix. Additionally the project has safeguarded a large number of jobs in the waste oil collection business.

8.4: Maximising the capacity of a waste water treatment facility
British Industrial Plastics & Link Waste
A good news case study from the BCSD-UK/MEBC National Industrial Symbiosis Programme – West Midlands

West Midlands based BIP operates an effluent treatment plant which currently treats all on site contaminated wastewater. However, this system is capable of treating a further 50,000 tonnes of aqueous effluent. The company had all the required discharge consents issued by the local sewage undertaker and the licences required by the Environment Agency for the treatment of third party waste. It therefore recognised the potential for a new business opportunity but was uncertain how to develop this further.

NISP assisted this company by identifying a waste company based in Staffordshire that wanted to expand its treatment capabilities but was concerned about the large capital investment required to develop its own abatement facility. The company was also concerned about the time constraints posed by the legal process in developing and registering a third party treatment facility. The two companies formally agreed to work together in seeking a solution to this problem. This project has introduced a new business to the region and also helped safeguard jobs for both businesses. Additionally a number of jobs will be created in collecting and treating the aqueous waste using the existing treatment techniques. This site will now be treating 1000 tonnes of waste each week and NISP has been instrumental in improving the company's asset utilisation.

8.5: Lack of a clear definition of precisely what a waste stream is under UK regulations
British Industrial Plastics (BIP)
BCSD-UK member
Extracted contribution from the BCSD-UK “Barriers to Waste Reuse” portfolio

Waste Stream definition in the UK

A major problem encountered by BIP is the lack of a clear definition of precisely what a waste stream is under UK regulations. Before any material can be processed or reused on an Environment Agency (IPC) regulated site, the operator may need to submit an application to the Agency. The lack of a clear definition for material waste has the effect that even the regulators find it difficult to interpret the regulation. The result is a very time-consuming application process for both minor and major variations. A similar problem is experienced with COMAH regulations.

Interpretation of EU legislation in the UK

The UK approach to EU legislation is problematic – there is often a mixed message from government concerning waste regulations which invokes uncertainty in industry. For example, with the recent fridge problem the government’s approach was extremely uncertain. Before industry invests in technology to facilitate recycling and reuse of waste materials it must be sure what the government’s approach will be (for example, a ban or derogation) and the likely time-frame. Without a clear idea of government thinking and time-frame proactive forward planning becomes very difficult. The uncertainties in the area of waste policy make it difficult for waste producers to develop coherent medium to long-term strategies. DEFRA must therefore maintain a consistent approach.

Flexibility in EU legislation

There is a clear need for a more level playing field across the EU. EU legislation is often designed to be flexible and is enacted differently in each Member State. Consequently some EU nations treat EU Directives as guidance rather than as strict law. This discrepancy might draw investment in waste reuse technology away from the UK to other Member States. There is therefore a need for commonality on how regulations and processes are implemented within the EU.

8.6: Special Waste Regulations 1996 (as amended) & the Transport of Waste
Coors
BCSD-UK member
Extracted contribution from the BCSD-UK “Barriers to Waste Reuse” portfolio

Coors have an EA special waste explanatory note (SWEN 013 version 3) the description of which is: "MOVEMENT OF WASTE BETWEEN ADJACENT/ADJOINING SITES, AND WITHIN THE SAME SITE"

The company operates a 127 acre site at Burton, bisected by a public highway between the No1 brewhouse/pilot plant/technical centre and the main area of the site. Security gates prohibit public access to each area of the site but the company has free movement of vehicles across the highway.

The company would like to transport waste from the brewhouse side to the main site comprising the main decanting and sorting areas where the waste is sorted prior to collection by Biffa for disposal or recycling. The explanatory note states the following:

"Where there would be a single boundary for a site, but for a public highway dividing the site, the Environment Agency will treat the separate parts of the site on each side of the highway as comprising the same premises. Consignment will not be required for movements within that site..."

This suggests that transporting waste across the public highway should not cause a problem in the company’s handling of waste. This is likely to apply if each entrance gate is opposite the other, however, at the Coors site these entrances are approximately 30 yards staggered. The note also states "provided that waste is not moved along the highway" which is the case at Coors. The company therefore incurs costs for specialist licensed contractors to carry out special pick ups from one side to the other.

8.7: The Classification of By-Products as Waste

Corus

BCSD-UK member

Extracted contribution from the BCSD-UK “Barriers to Waste Reuse” portfolio

Case Example: Iron Oxide from the hot rolling of steel

Previously this material has either been recycled back within the iron & steelmaking process or used externally in, for example, cement manufacture when iron units are required. It is not and never has been discarded and remains within the chain of utility. Previously this material has had a value of typically £15/tonne. If the material is recycled rather than landfilled, there is an obvious environmental benefit from the reduction in landfilling and also in reduced resource use.

Despite the long history of reuse/recycling of this material it is now considered to be a waste. As a result of this classification, the customer for this material will no longer pay £15/tonne, but now requires being paid £10/tonne, i.e. the material has lost £25/tonne in value on being defined as a waste. It may well therefore be lower cost to landfill rather than recycle this material.

Case Example: Use of “Waste” Plastics as a Replacement for Coke/Coal as a Reductant in the Blast Furnace

This example deals with processed and segregated (non-PVC) plastics as either manufacturing process off cuts or as recovered from the domestic waste stream. Carbon, in the form of coke, coal or oil, is used in the blast furnace to reduce iron ore to form iron, which is subsequently refined in the basic oxygen steelmaking process to produce steel. Alternative forms of carbon (or hydrocarbon) can be injected into the blast furnace to replace the coke, coal or oil as long as it is in the correct physical form, suitable for injection. Dioxins are not formed in the blast furnace as it is a reduction process (i.e. there is no available oxygen, which would otherwise be a prerequisite for the formation of dioxins). However, chlorine containing plastics are not wanted in any case, as any HCl formed will result in accelerated corrosion of the wet gas washing system.

Use of recovered/recycled plastics would reduce consumption of natural resources (coal/oil) and would reduce the amount of material (plastics) landfilled. As requirements for coke are reduced, the environmental impact (emissions to air and water) of the cokemaking process would also be reduced.

If the plastics are classified as waste, the blast furnace will become a waste co-incineration plant, despite the fact that it is not, nor is it similar to, an incineration process. This would mean more strict process and emissions control. Investments, in particular on monitoring, would be needed.

Perhaps more importantly, despite the clear overall environmental benefit, there would also an image problem, with blast furnaces likely to be viewed by the general public as equivalent or similar to incinerators, which in the UK at least have a very poor reputation particularly concerning their perceived impact on public health.

Overall suggestions & recommendations to reduce barriers to waste reuse

(i) DEFRA should review the "rules", which are inflexible and often detrimental. These rules are currently being enforced with insufficient consideration of the environment as a whole.

(ii) The EA needs to take a more pragmatic and holistic look at how they enforce these rules. They need to understand the implications of how they are enforcing and they need to take into consideration wider factors than they currently do. Check list regulation is too simplistic and will not work.

(iii) The objective of the EA should be to improve the environment not just to enforce the rules.

(iv) There needs to be recognition that the waste management industry has different objectives than the rest of industry. The opinion of the waste management industry is often taken as being representative of the whole of industry, when they have actually have little or no concern over the costs of waste treatment or disposal as they can pass these costs on and in fact see all issues to do with waste as opportunities, with no recognition of the threats.

8.8: Corporate Social Responsibility makes good business sense
Deloitte
BCSD-UK member

Responsible business is an essential component of our reality and our vision. The frameworks we adopt for being a responsible global business begin with our core business strategy and practice. Corporate Social Responsibility (CSR) makes good business sense. If we are perceived as an ethical, values-driven organization, we have a distinct advantage when we compete for clients and talent. We can raise the bar on greater opportunity globally by not only complying with laws and regulations wherever we operate but also by leading and voluntarily engaging in ethical behaviour and principled economic conduct and by living out our Shared Values. In the process, Corporate Social Responsibility becomes the external manifestation of our Shared Values where:

- **Integrity and quality** are the cornerstones of accurate financial reporting, strong capital markets, and sound corporate governance.
- **Outstanding Value to Clients and Markets** stems from the effectiveness of our services and helps us protect the public interest and maintain investor confidence.
- **Our Commitment to Each Other** is demonstrated through our active community involvement aimed at building resources and capacity, economic development and education; as an Employer of Choice, we employ outstanding professionals and equip them with the training, experience, and tools to serve our clients with excellence.
- **Our Strength from Cultural Diversity** emerges from our multiculturalism, principles of inclusion and the ability to operate globally, and is enhanced by our commitment to work together by understanding and respecting differences.

Deloitte's ultimate goal is to be recognized as the best and most trusted professional services firm in the world. Being the best means recognizing and addressing our role as a responsible corporate citizen. Deloitte fosters a global culture of responsible business through its activities in the following three areas:

1. Principled Economic Conduct

As part of our Global Shared Values, we are committed to "applying the highest standards of professional conduct to all our activities with our clients and communities." This means ensuring that in all our relationships and dealings with clients and the public, we must act with integrity and demonstrate trustworthiness and quality.

2 Professional Competence in the New Business Environment

In today's business environment companies are expected to be responsible, transparent, and accountable in order to win the trust of their stakeholders and to maintain their licenses to operate. "Success" in the new business environment requires equal attention to financial and non-financial indicators. Via our multi-disciplinary services approach, we can help our clients understand and navigate this new environment. In doing so, we not only help our clients excel and prosper but also encourage responsible business practices in the marketplace at large.

3 Building Human Resources and Organizational Capacity

Our people are our primary resource and our most valuable asset. Taking active responsibility for our people is an area of strength for our firm because Deloitte's success depends on the quality of the people it hires. To serve our clients with excellence, we employ outstanding professionals and equip them with the training, experience, and tools they need to excel. Our Global People Commitments describe how we strive to work together and help one another thrive and succeed both inside and outside the workplace.

8.9: Bureaucracy and Funding Regimes
Environmental Business Communications
BCSD-UK and MEBC secretariat

EBC has, on behalf of both not-for-profit business networks, formed close links with national and regional government departments and agencies and developed partnership relationships on a variety of projects in which public funds have supported business led sustainable development initiatives. These have already been successful in meeting the objectives of both the public and private sector organisations associated with these activities.

However, the success has not been without its pain represented by, for example:

- Funding streams that include targets which are not in harmony with the main objectives of the UK Government's Sustainability Strategy and which, whilst being necessarily tackled to support the project and obtain the funding, actually act as a barrier to the delivery of the objectives.
- The sheer complexity of bidding for funds. As someone once said so aptly, the bidding process is so long and complicated that by the time it has been achieved the only time and effort left can only be allocated to the development of the project exit strategy.
- The lack of cross government departmental liaison resulting in the potential bidder being passed from one department to another to another in an enormously time consuming merry-go-round.
- Funding regimes that change their claims procedures on an unbelievably regular basis.
- Funding regimes that demand that the contractor works within the terms of the contract but then which itself constantly breaks the contract.
- Funding regimes that are supposedly specific to the support of sustainable development activity but which are based on highly specific objective boxes. Many of which often have no relevance to sustainable development.
- Funding streams managed in such a bureaucratic way that their efficiency is compromised with, for examples, claims forms lost within the system on a regular basis
- The complexity and difficulties of forming public and private partnerships such as one that took some years to develop, ran for a while and funded some projects but not many, then was prejudiced by the demise of the RDA funding support which compromised ERDF funding support. Actual support costs to the project exceeded £1m excluding private sector time support.

8.10: Regulation Implementation delays and generally unclear Policy-making process
Glacier ARM
BCSD-UK member
Extracted contribution from the BCSD-UK "Barriers to Waste Reuse" portfolio

Glacier ARM sources mineral-based wastes that are currently landfilled and blends them to meet specifications for replacements of Sand, Iron ore, Bauxite (alumina ore), Shale/Clay, Limestone/Chalk, and Gypsum.

The industries we can offer a service to include:

- Water Utilities
- Steel & Iron manufacturing
- Aluminium & Alumina reprocessing
- Petrochemical
- Pharmaceutical
- Chemical
- Food & Drink
- Automotive manufacturing

This Recovery solution can currently offer over 300,000tpa capacity. Of this we can incorporate 20-25% as Special/Hazardous Wastes. These are typically high-alkali, oil-contaminated, or acidic wastes such as paper ash, contaminated soil, and diatomaceous earths.

The delay of the implementation timetable of the Landfill Regulations particularly, and legislation in general, together with a generally unclear Policy-making process are undermining the viability of Glacier and, we would suggest, other similar potential concepts. To echo the Strategic Waste Forum's views, we are encountering significant Planning and Waste Management Licensing delays. The Planning process especially appears driven by non-directly involved bureaucrats and in any case has total disregard for any timely decision-making requirements. A site in Sheffield with an existing Planning Permission has, so far, taken over 8 months to get modified Permission for an enlarged process scope. It even took 5 months to have the Planners first meet us to discuss the Application. Glacier's experience mirrors exactly what even the Environment Agency are acknowledging

The waste management industry is currently experiencing increased business risks associated with economic performance. The current cost of capital, delays associated with gaining planning permission and a perceived lack of enforcement of unscrupulous operators, means that the industry is unlikely to invest in new, large-scale treatment capacity, etc.

With a clear Regulatory, and thus commercial landscape, Glacier could bring forward expansion plans which are threatened by the barriers and uncertainties previously encountered. Glacier could, within 3-4 years be diverting over 1m tonnes per year from landfill. But this will take cooperation from the local and regulatory Authorities.

8.11: Sustainable Development in the Pharmaceutical Context
GlaxoSmithKline
BCSD-UK member

Good News – Eco-Design Kit to evaluate environmental merits
Bad News – regulations that make it difficult to change processes

Pharmaceuticals are complex molecules. Their chemical synthesis can involve seven or more stages with mixed aqueous and organic processes and wastes, which presents some special challenges for sustainable development.

Pharmaceutical processes are highly regulated by government agencies in the countries where they are sold, (US Food and Drug Administration (FDA), European Medicines Agency (EMA), UK Medicines and Healthcare products Regulatory Agency (MHRA) and others) which means that changes to the synthetic route or manufacturing processes post-approval are costly. There is therefore a need to decide the synthetic route early and rapidly in the development process. Historically, this has resulted in less than optimal processes from a sustainability standpoint.

To help chemists and engineers make these difficult choices, GSK has developed an Eco-design Toolkit. This suite of software is provided over the company's intranet and enables researchers to quickly evaluate the relative environmental merits of different synthetic routes. Lifecycle analysis is performed automatically and the researcher is presented with simple colour-coded choices based on resource usage and environmental impact. Use of the tools has already enabled the company to double the resource utilisation for some new pharmaceuticals under development.

Many of the obstacles that hinder the move towards more sustainable practices relate to the regulatory system for pharmaceuticals. By taking a prescriptive approach rather than requiring a management system the regulations make it difficult to change processes. They encourage the use of "safe" technologies, i.e., ones the regulators have seen before and discourage support for "risky" chemistries and technologies that might allow progress towards sustainability. Current regulations also create impediments to re-use of "wastes" as raw materials in other processes because of concerns about quality. There is a need to re-focus the regulatory system on product specifications rather than process specifications to allow greater innovation in process design.

8.12: Waste sulphuric acid to usable gypsum
Huntsman Tioxide/Knauf UK gmbh
A good news case study from the BCSD-UK National Industrial Symbiosis Programme

Huntsman Tioxide is a global supplier of titanium dioxide pigments. At Huntsman's Grimsby plant, some 600Kt of waste sulphuric acid are produced in the TiO₂ manufacturing process, which required disposal. EU Directives stipulated that acid discharge should be reduced by 95%. This target could be achieved by either acid recycling, which is prohibitively expensive or by neutralisation. The neutralisation option was chosen since a local outlet for the large quantities of the resulting gypsum co-product was developed with Knauf UK gmbh.

Huntsman duly invested £27M on a new gypsum plant and established a long term supply contract with Knauf, a plasterboard manufacturer. Knauf requires over 200,000 tonnes of gypsum per year. Through the partnership developed, Huntsman now supplies 160,000 tonnes per year to Knauf.

Knauf built its second factory close to Huntsman with the specific intention of sourcing gypsum from Huntsman. This cooperation has reduced the need to source a significant quantity of gypsum from overseas and has secured a long term partnership between the two companies. Through the experience both companies have learnt that mutual trust, commitment and good communication

8.13: The Substitute Fuels Protocol (SFP) establishes high barriers to waste reuse
Lafarge Cement UK (formerly Blue Circle)
BCSD-UK member
Extracted contribution from the BCSD-UK “Barriers to Waste Reuse” portfolio

Alternative Fuels

The Substitute Fuels Protocol (SFP) establishes high barriers to waste reuse that apply only to the cement industry. Lafarge, along with other cement manufacturers in the UK, would like to see the removal of ‘double standards’. For example, Recycled Liquid Fuel is classified as special waste and the company must pay for Section 61 notes for each load. At the same time duty is paid on each load since it is classified as a fuel for the purposes of VAT.

The protocol has imposed lengthy delays in the permitting process which has delayed environmental benefits being achieved. Along with other cement manufacturers, the company have been lobbying for withdrawal or modification of the protocol, and it is pleasing that a draft revision had recently been issued for consultation.

Alternative Raw Materials

Lafarge would like to see the removal of legislation that dictates that a mix of small quantities of special or hazardous waste into non-hazardous waste becomes hazardous. If this legislation could be changed to allow mixing and reclassification, it would be of great benefit.

Waste Hierarchy

Lafarge support the waste hierarchy in as much as the most preferred option is to eliminate or at least reduce their own waste. Schemes, such as Landfill Tax, which encourage companies to send waste to landfill are to be encouraged, with disposal as the final option. However, the company has experienced barriers in seeking to move waste up the hierarchy to recovery/ recycling, and feel that means should be found to promote such moves.

8.14: Developers and sustainable development
Land Securities
BCSD-UK member

Good News – much more attention being paid to environmental issues
Bad News – biodiversification still poorly understood

On the plus side:- Developers are now paying much greater attention to environmental issues than just five years ago. Energy efficiency is better understood, but there are still problem getting occupiers to make an effort help reduce usage, it is still a minor cost to them. With British Land we recently led a project to establish CSR-procurement guidelines for development, with construction industry partners. More demolition waste now seems to be recycled as a matter of course. At Land Securities we have just introduced a new EMS and aim to be certified across ALL of our business by April 2005. This requires the sustainability questions to be asked at an early stage of all development projects.

Biodiversity is generally poorly understood - saving the odd butterfly habitat is just a PR exercise. However, in the bigger scheme of things this really only amounts to dabbling at the margins, buildings that are 10%, 20%, 30% more efficient in terms of eco-footprint will no make very little difference to the overall impact of the UK economy, never mind the global one.

8.15: Storage and transportation of waste material from one site to another inhibits recycling
Land Securities
BCSD-UK member
Extracted contribution from the BCSD-UK “Barriers to Waste Reuse” portfolio

The industry is transparently recycling more demolition waste now than even a year or two ago. However, one hurdle inhibiting even greater recycling is the storage and transportation of waste material from one site to another. For large schemes it may be possible to utilise demolition waste as in-fill and hardcore prior to construction on the same site but more commonly it needs to be taken to a different location. If there are no "local" schemes operating concurrently, then it is very difficult to arrange storage.

- For construction work, materials must satisfy various structural criteria
- Designers often seem reluctant to use recycled materials - maybe a perception that it reflects a lower quality of job.

In finished, occupied properties there are many examples of the use of goods with a recycled content. Stationery is an obvious example but beyond this examples include toilet rolls, carpet and reconditioned furniture.

8.16: Scampi shells can now be incinerated in the Highlands as an alternative to transportation to France for conversion to bouillon.

North East Incineration Services; Fastnet (Highlands) Ltd

A good news case study from the BCSD-UK National Industrial Symbiosis Programme

Scampi (aka langoustine, Norway lobster, Dublin Bay prawn) have meat inside the tail section, but little inside the very hard claws and head. The head and claws are of no use to many seafood producers, but as they contain small amounts of flesh they cannot legally be landfilled or landspread. Some producers freeze the heads and claws and transport them to France to be made into bouillon, but the market is very turbulent and there are high economical and environmental costs. Suitable high-temperature composting is not yet available in the area.

An incinerator in the Highlands already incinerates animal by-products, and found that the scampi shells burn well when mixed in. SISP assisted with getting regulatory clearance to incinerate the scampi shells, firstly from Fastnet (Highlands) Ltd, and later from other scampi processors.

North-East Incineration Services is now incinerating a steady stream of scampi shells, and will be able to assess the market in preparation for legislative changes under the Waste Incineration (Scotland) Regulations 2003. Five tonnes per week of scampi waste is now disposed of locally, and are transported to the incineration plant in a back-hauling arrangement. As the only alternative is transportation to France in 12 tonne containers, this saves over 600 road miles per 12 tonnes, or 13,000 road miles per year (plus cost and energy involved in keeping the scampi frozen during the journey). This equates to a large amount of CO₂ emissions being avoided.

In addition, SISP is now investigating a possible use for the lime produced during the incineration of crustacean shells. The shells contain a significant amount of calcium carbonate, and in combination with the shells of molluscs such as oysters, Scotland has a potentially sustainable source of lime. As Scotland's lime is currently quarried and imported from France, a considerable saving is likely. With the introduction of recycled aggregates, a truly sustainable alternative to common concrete may soon be available. In addition, Scotland's extinct lime industry could be reborn.

8.17: Recycling of 25 litre plastic drums

Rohm and Haas Electronic Materials Europe Ltd & Delleve Plastics Ltd

A good news case study from the BCSD-UK/MEBC National Industrial Symbiosis Programme – West Midlands

Approximately 12 million 25 litre plastic drums are consumed annually in the UK and they find use across a variety of industrial sectors. These plastic drums represent a major potential source of recyclable high-density polyethylene (HDPE). The containers are made of a single polymer and constitute an easily recognisable waste stream that provides a homogenous recyclate. Currently, most of these containers are used once and are then consigned to landfill. This approach is undesirable from an environmental perspective and represents a non-sustainable use of finite petrochemical-based raw materials. More needs to be done to redirect substantial volumes of waste drums away from landfill and towards sustainable options such as recycling.

Rohm and Haas Electronic Materials Europe Ltd is pleased to lend technical support to a project with a West Midlands-based company to operate a large-scale drum reprocessing operation capable of processing many hundreds of thousands of drums per annum. Funding from the Waste and Resources Action Programme (WRAP), with additional support from Rohm and Haas Electronic Materials Europe Ltd, has enabled a detailed assessment of the technical and economic feasibility of recycling the spent containers. The authors of the report also conducted an extensive questionnaire-survey of industry to determine UK 25 litre drum demographics which has shown that the highest concentration of plastic drums occurs in the West Midlands. This may be explained by the large number of chemical producers and users across the region.

NISP is conducting a feasibility study to investigate the potential for creating a new business to clean, reuse and recycle these drums. This is being conducted in partnership with EnviroInnovate (funded by Advantage West Midlands) and Envirowise (funded by the DTT). NISP has already identified a possible site for the reprocessing operation and identified a large number of companies wanting to develop a sustainable reprocessing route for the plastic drums.

The project has the potential to divert one million drums from landfill, or approximately 12,000 tonnes of HDPE. Reprocessing this waste stream will also prevent the leaching of residual deposits and toxins into the environment. This project has the potential to create a new business, promote sustainable development and create new employment opportunities in the region.

8.18: Brewery Examples of Sustainable Development in practice.
Scottish & Newcastle
BCSD-UK member

Good News – progress on various fronts
Bad News – lack of support from RDA

Education

Development of an education programme in the Herefordshire area to develop understanding of sustainable landuse. The Sustainable Development Masters Advocacy Programme links together business, education and the land use community to the skills required to promote sustainable landuse.

Agriculture

Project Carrot involves the development of 224-hectare farm as an example of best practice in sustainable land use. In addition, Bulmers have converted a significant area of orchard to organic status.

Wind, biogas and biomass energy

- A number of breweries in the group use biogas from effluent treatment works to substitute the use of natural gas. This is expanding in order to reduce water disposal costs and increase the use of a renewable energy source.
- Discussions have been held regarding the installation of wind turbines at a brewery site. However, these have stalled due to lack of support from the regional development agency in getting approval for a feasibility mast to be installed.
- A biomass electricity generation plant is proposed at one of our sites. This will provide all site electricity and all fuel material will be transported to the site by rail.

Waste and co-products

Various R&D projects looking at alternative uses for keiselguhr and spent grains. Other sites are experimenting with composting to reduce the amount of effluent derived sludge to spread to land.

8.19: Classification and transfers of waste
ScottishPower
BCSD-UK member
Extracted contribution from the BCSD-UK “Barriers to Waste Reuse” portfolio

Waste Derived Fuel (WDF)

Sewage sludge from the Greater Glasgow catchment area is taken to our purpose-built fuel processing plant at Daldowie to the east of Glasgow. This is a new facility, commissioned last year, following an investment of £65m.

The sludge is converted to a fuel at Daldowie and then taken by road to Longannet Power Station where it is burned as a coal substitute. At Longannet a further £5m has been invested in storage and materials handling facilities to convey WDF to the boilers.

In total, 45% of Scotland’s sludge is converted into 52,000 tonnes of fuel, which in turn generates 100,000 MWh of electricity at Longannet – enough to supply 30,000 homes each year. In the process, some 40,000 tonnes of coal reserves are conserved annually.

If WDF is deemed a 'waste' then its combustion at Longannet would fall under the terms of the Waste Incineration Directive (WID). The emission limits applying to waste incinerators are very stringent and are not capable of being met by any coal fired power station in the UK.

Upgrading Longannet to WID emission standards would cost between £100m and £400m depending on the number of generating units that required upgrading. The WID refers to *site* emission standards which introduces the possibility that all four generating units would need to be upgraded despite the fact that WDF is only combusted on two. To all intents and purposes therefore, the effect of classifying WDF to be a 'waste' would be to prohibit its use by ScottishPower as a substitute fuel.

This classification would be quite arbitrary, taking no account of the properties of WDF and the environmental benefits that accrue from its use as a fuel. In our discussions with SEPA, there has been no suggestion that the combustion of WDF at Longannet is more harmful to health or the environment than the coal it displaces.

If this trend is not reversed, Longannet will be prohibited from combusting WDF from 28 December 2005 and there is insufficient time for any interested party to build a waste incinerator for the material.

Power Station Ash

Within the UK, some 50 million tonnes of power station ash has been recycled (mainly via the construction industry) since the 1950s. In Scotland around 500,000 tonnes are sold each year. A mature and significant market has developed using ash in a variety of applications from concrete to structural fill. It should be noted that power station (coal) ash should not be confused with incinerator ashes, which are often considerably less benign due to the variable and often hazardous nature of the feedstock.

ScottishPower has invested £8m in a state-of-the-art recovery operation at Longannet aimed at further developing ash sales. We believe these facilities are the best to be found in the United Kingdom and make a significant contribution to sustainable development. Despite the substantial use of coal ash in a variety of markets over many years, there is no evidence of harm being caused to health or the environment. It is undeniably one of the most successful and beneficial recycling operations in evidence today.

In determining coal ash sales to be 'transfers of waste' the Environment Agency is already impacting on ash sales in England and Wales and material that could and should have been recycled is currently being diverted to landfill. Sales of ash in future will require waste carrier licences, waste management licences and each delivery of material will be accompanied by a waste transfer note. This will increase costs and in many cases will make recovery unviable.

Branding valuable construction materials as 'wastes' will also harm *perceptions* of the material by the construction industry and their customers.

8.20: Severn Trent Water

MEBC Member

The 'environmental cost of quality' debate needs an independent arbiter to determine when the improvement of one index of sustainability is no longer justified by the deterioration in another

A key issue that dominates our sustainability agenda and demonstrates the good and the bad aspects of sustainable development policy is, that as a water company, we have a statutory obligation to deliver good wholesome water to our customers. It also has to clean waste water to acceptable standards before discharging it back into the aquatic environment. The definition of acceptability is largely dependent on the interpretation of environmental legislation by the relevant regulators. As quality standards are inexorably raised in both arenas, public health improves but the water company needs to deploy increasingly energy intensive treatment plant to achieve the necessary quality and reliability standards demanded. Most of the energy required is electricity purchased from the National Grid. This increases the company's indirect contribution to emissions of greenhouse gases and hence global warming and growing climate uncertainty, which in turn threatens the reliable yield of its most precious asset - its water resources. This 'environmental cost of quality' debate needs an independent arbiter to determine when the improvement of one index of sustainability is no longer justified by the deterioration in another.

8.21: Sony

The potential to use hundreds of tons of recycled PET rather than HiPS if supply of this stream can be guaranteed in the UK.

Extracted contribution from the BCSD-UK “Barriers to Waste Reuse” portfolio

Case Example: Recycling of cathode ray tube glass

Recycling of cathode ray tube (CRT) glass began in 1998 when Mann UK and Sony perfected a system enabling scrap CRT glass to be recycled into new CRT glass rather than be landfilled. This is the first comprehensive scheme for the recycling of all defective glass and defective completed CRTs in which all the glass reclaimed enters the production of new CRT glass. This has been extremely beneficial to the environment, reducing glass going to landfill by 2700 tons per year, reducing the amount of raw material purchased (for glass manufacturing) by 2500 tons per year. This initiative has also reduced the consumption of energy in the production of CRT glass.

However, to achieve this recycling system the companies encountered several obstacles. These included:

- Establishing new standard specifications for CRT glass
- Identifying potential partners
- Encouraging glass manufacturers to accept recycled glass
- Establishing the recycling system
- Development of a cleaning and segregation system
- Setting up of on-site system

Case Example: Recycling of PET bottles

Sony conducted an exercise to investigate alternative recycled materials to replace its high impact polystyrene (HiPS) used in mouldings. The best alternative was discovered to be PET (Polyethylene Terephthalate) from recycled plastic drinks bottles. However, while the company was able to source material for the Barcelona plant from Spanish streams it was not able to source material in the UK. There is potential to use hundreds of tons of recycled PET rather than HiPS if supply of this stream can be guaranteed in the UK.

8.22: Concrete recycling

The Sims Group & Marley Building Materials

A good news case study from the BCSD-UK/MEBC National Industrial Symbiosis Programme – West Midlands

NISP members The Sims Group and Marley Building Materials are dedicated to offering innovative recycling solutions and both aim to develop a 100% recycling option across each of their processes. These companies have identified a synergy by which a waste stream from Sims Group reprocessing activity could be utilised as a raw material in Marley’s manufacturing process.

The Sims Groups dismantles and reprocesses used washing machines. Washing machine manufacturers incorporate a large block of concrete into the design as ballast to ensure the machine is stable during the spinning and drying cycles. While most of the waste components from these machines can be recycled, the concrete is more problematic and is currently sent to landfill.

The Group has developed a variety of innovative and sustainable methods to recycle most of the materials from this process, but has been seeking an optimal solution for this particular waste stream.

Marley Building Materials has developed a range of novel recycling solutions to utilise waste concrete materials in their manufacturing processes and has worked very closely with Sims Group through the NISP programme. Already small trials are underway and are proving successful. It is hoped that a full-scale commercial operation to recover this waste stream for reuse in construction materials will be underway shortly.

This project will reduce the cost base for both businesses and help to safeguard jobs both now and in the long run. Additionally the synergy will divert over 3000 tonnes from landfill and the technology should have application for additional building material streams.

8.23: Successes and Failures in redevelopment of potentially contaminating sites.**Stuart Guy Consulting****MEBC member****Successes:**

Achieved completion on an inert fill tip where houses were to be erected around existing fishing lakes. Earlier attempts at 'improving' the quality of the fishing lakes involved tipping horse manure around the perimeter of the lake part of which then was covered with inert fill. High methane and carbon dioxide levels in boreholes lead to many questions from the EA. Approximate quantities of manure tipped were elicited from the site operator and modelling of decomposition of the manure (with many assumptions) satisfied the EA that manure was the source. This has released a large area of land inside a city for housing.

Another site was examined and the recommendation of another consultancy that 1 m be removed from the whole site because of hydrocarbon contamination was overturned and a small amount of soil will be removed from garden areas only. This has saved £60k in costs and about 80 lorry loads not being removed from site.

Failures:

An old petrol retail outlet was to be developed for housing and the site investigation revealed no hydrocarbons. However, the local EHO would not believe that the results and more investigation had to be done. This caused 9 months delay and more costs. A coach garage that was formerly used for car sales and petrol retail from about 1930 to about 1968 was investigated for contamination. None was found, but because of a consultation document on the EA site, this investigation was not accepted. No argument was accepted because the EHO "did not understand the chemistry or the processes" so a new investigation involving more trial pits and analysis was undertaken. Nothing was found as expected. The consultation document requires an understanding of the reasoning behind the suggestions. In this case, the delays were quite long and the extra disruption of a JCB in a busy narrow road was unwelcome. The original investigation was sound and I argued the case. That was rejected by just referring to the consultation without any scientific reasoning, except that spills from oil refineries cannot be analysed by the method I used (however, the nearest oil refinery is some way from that town).

8.24: Wood Fuelled Heating at Oakengates Leisure Centre**Telford & Wrekin Council, Econergy Ltd, Stanhope Recycling, Marches Wood Energy Network****A good news case study from the BCSD-UK/MEBC National Industrial Symbiosis Programme – West Midlands**

A 325KW wood chip fuelled boiler is being installed to provide heating for Oakengates swimming pool and leisure centre in Telford, Shropshire.

Telford & Wrekin Council has let a ten year contract with Econergy Ltd for the supply of heating over this period. Econergy will operate and maintain the boiler and sell the heat to the council. Econergy will purchase clean wood chips from local company Stanhope Recycling Ltd.

Marches Wood Energy Network has provided project management advice and support throughout.

8.25: Barriers to waste reuse**Veolia Water Industrial Outsourcing****BCSD-UK member****Extracted contribution from the BCSD-UK "Barriers to Waste Reuse" portfolio**

Veolia Environnement's subsidiary companies in the UK encountered the following barriers to re-use of waste:

- i. Inconsistent and conflicting policy and controls on the composting industry as a result of different perspectives from Government departments eg. DEFRA and FSA.
- ii. A lack of scientific objectivity and inconsistency in the regulators and development agencies particularly in respect to politically sensitive waste to energy and recycling plants and processes.

For example, a Veolia subsidiary company has supported an SME in the development of a process that recycles excavated material directly back to the original excavation. This process eliminates the transport of such waste to landfill and avoids the import of virgin aggregate from the South West of England. Environmental impacts of transport, aggregate extraction and landfill are thereby eliminated. Economically, the process is cost effective provided there is flexibility and ready access to local sites. The most appropriate site for the treatment process is a licensed landfill or waste transfer station that possess the necessary attributes (wheel wash, concomitant vehicle movements, weighbridge etc.). The planning authority insist that the process cannot be sited at a landfill and wishes it to be located on an industrial estate which has none of the attributes of a waste management site, will require additional licensing and result in more heavy vehicle movements. The EA has interpreted the legal definition of 'waste' as applying to the recycled material which increases the administrative burden, inflexibility and cost of the process resulting in a less attractive economic model.

- iii. Inconsistency and variable interpretation of waste definitions by the EA and local authorities. In some areas this is balanced by a positive acceptance of the practicality of the 'Safe Sludge Matrix' in the disposal of sewage sludge to agricultural land.
- iv. The adverse rating of the waste and environmental services sector by financial analysts does not encourage investment in essential infrastructure in the UK.
- v. Historically there has been a lack of focussed and accountable public funding for recycling schemes and projects, particularly in support of markets. WRAP should stimulate and sustain such markets but its direction and focus needs to be transparent, co-ordinated and appropriate.
- vi. There are serious gaps in the knowledge of the sources, pathways and treatment of wastes from a number of sectors including agriculture, electronics, electrical and white goods, contaminated soil and liquid waste. This was highlighted in a study published by the Forum for Waste and Resources Research and Development (FORWARD).
- vii. The failure to respond to the Landfill Directive in a timely or constructive manner has resulted in the threat of illegal disposal, fly-tipping and stockpiling of hazardous waste. A repeat of the 'fridge mountain' is undesirable.
- viii. Inconsistency between what is defined as 'domestic' waste and hazardous waste. For example, a householder can dispose of used fluorescent tubes (containing mercury) or batteries in a domestic dustbin and they are collected and landfilled with the municipal refuse. If, however, a contractor or indeed the householder replacing the tubes in the same household takes them to a municipal refuse centre they are deemed to be hazardous waste. This leads to inappropriate disposal and an inaccuracy in the waste statistics.
- ix. Conflicting issues between environmental and sustainable development policy and parallel regulatory regimes. For example, the introduction of NETA with respect to electricity prices has thwarted and stifled the development of and investment in renewable energy sources and Combined Heat and Power plant.

8.26: The Morton Palms Enabling Infrastructure Contract – case study.

Wardell Armstrong
MEBC member

Good News – implementation of a sustainable design solution

Bad New – the amount of time taken by the adoption process

The Morton Palms Enabling Infrastructure Contract was undertaken during 2001/2, for the construction of the onsite infrastructure to prepare an 11.5 hectare site for development as a high quality business park. The site was earmarked by the local authority as a gateway development to the Tees Valley. The works involved the design of earthworks, services (existing and proposed), drainage (foul and surface water) and roads. The initial proposals presented as part of the design brief for the site included a preliminary design of the surface water drainage that involved the use of oversized pipes to provide onsite storage attenuation. Although a watercourse passes through the central area of the site the drainage solution precluded a discharge within the site boundary, necessitating an additional 250m of pipework to reach a suitable discharge level along the watercourse. The additional length of pipework involved a crossing under the A66(I).

The proposed solution reviewed the design of the surface water drainage such that the attenuation was achieved using ponds rather than oversized pipes and ensured that the discharge to the watercourse was within the site boundary. As well as a sound technical solution to the problem of surface water attenuation the ponds also provided synergy with the aspirations of the site to have high quality landscaping. The drainage design was integrated with the earthworks for the plot levels so that the mass haul of materials on site achieved a balance of cut and fill, thus avoiding the need to import or export earthworks materials.

So much for the successful element of the sustainable design solution.

The drainage solution was achieved following detailed consultation with the Environment Agency and the Water Authority. Unfortunately the Water Authority were unable/unwilling to adopt the associated piped drainage networks discharging to the attenuation ponds without the Local Authority adopting and maintaining the ponds. This aspect of the adoption process took a considerable amount of time to resolve, despite there being a willingness on all parties to achieve the necessary adoptions.

Although the Morton Palms scheme was successfully adopted we have at least one other scheme that is being held up due to the adoption process associated with a sustainable attenuation solution; in this case an attenuation basin. Model agreements for sustainable water management systems have recently been produced by CIRIA. It will be interesting to see if the model agreements assist in resolving what is possibly the biggest single obstacle to the implementation of sustainable urban drainage systems as part of development sites.

**8.27: Sustainability in Local Authority
Warwickshire/Arup Partnership
MEBC and BCSD-UK member**

Good News – local authority and private sector in partnership seeking to achieve sustainable development outputs
Bad News – procurement still dominated by lowest capital cost measures

Warwickshire and Arup formed a partnership in July 2001, primarily for Arup to support the County in highway design. However, the partnership has since expanded and recently resulted in Arup seconding one of their Directors, who is an expert in sustainable development, to Warwickshire in an interim management role as Head of Sustainability. This interim role lasted six months, while a permanent Deputy Director for the Department was recruited. A major part of the role was to introduce sustainability into the Department and give direction to the newly formed Sustainability Unit. This injection of private sector experience and outlook proved very beneficial to the County, while Arup gained an insight into public sector issues and pressures at the highest level. Some of the successes arising from the role include the introduction of EMS into the County, raising staff awareness and training staff regarding sustainability and the workplace, the Council adopting a motion to support Fair Trade and developing a waste management strategy to meet Government diversion targets.

On completion of the interim management role, the Director is continuing to advise the Department on a consultancy basis. The partnering arrangement has been very beneficial to both private and public sector partners in developing their concepts of sustainable development and transferring skills. A major challenge both with both public sector and private sector clients is that they are still wedded to lowest capital cost, and ignoring whole life costs when assessing tenders. This stifles innovation and sustainable design.

**8.28: Waste to energy – tackling the UK's waste tyre problem
Waste Tyre Solutions & Sapphire Energy
A good news case study from the BCSD-UK/MEBC National Industrial Symbiosis Programme – West Midlands**

Each year in the UK more than 40 million tyres are removed from vehicles (cars and trucks) and sent to landfill sites as scrap. The disposal of this waste is now a major problem and one which is set to grow unless alternative outlets are developed – changes in legislation will ban whole tyres from landfill sites in 2003 and chipped tyres in 2006. Through NISP two companies in the West Midlands have expanded their business operations by co-developing a waste to energy reprocessing plant which utilises scrap tyres.

Waste Tyre Solutions is the UK's leading tyre management company, collecting and recycling over 10 million every year. Sapphire Energy is the UK's leading used tyre processing company currently securing and processing 100,000 tonnes of used tyre per annum. Together these companies have developed a small transfer station into a large, modern, high quality waste transfer and treatment facility for this waste stream.

The process begins when Waste Tyre Solutions collect, treat and shred scrap tyres from the West Midlands. The shredded tyre material is then sent to Sapphire. From here it is used as a fuel to heat raw materials in cement kilns to temperatures in excess of 1,000°C. The new site is now currently reprocessing and diverting 20,000 tonnes from landfill as part of a network processing 100,000 tonnes. Sapphire is set to achieve 150,000 tonnes per annum across the UK market.

The environmental benefits realised from this operation include:

- improving the overall environmental performance of the cement works
- helping to solve the UK's scrap tyre disposal problem
- diverting waste from landfill in the West Midlands, thereby enhancing the quality of the regional environment
- preserving non-renewable fossil fuels for future generations
- improving the industry's competitive position by reducing its high energy costs

The UK and European governments both acknowledge the use of scrap tyres in cement manufacture as *"a valuable recovery route"* and *"an economically attractive substitute for traditional fuels"* (from Making Waste Work – Report 1996).

In addition, this new project has given rise to significant social and economic benefits. In particular the project has safeguarded 40 jobs and created 30 new jobs through the logistics, chipping facility and transfer station.

8.29 WindSupply BCSD-UK led project Developing a UK supply chain for the emerging renewable energies manufacturing industry

The following is extracted from a Project Action Group Review Workshop held at Loughborough University on 14/7/04

Ways for the WindSupply Project to go forward, from table working groups

- Continue the WindSupply innovation focus groups in their own right to develop new products and sub-assemblies, but also to strengthen all networking and find & help new entrants to the market.
- Strengthen WindSupply direct representation in the marketplace; including more developed contact with OEMs; more in-depth understanding of the procurement route; and more detailed information access, including the identification of the key industry "drivers".
- Continue initial research and formulate proposals to establish a UK standards/approval body and a UK component (virtual) test centre.
- Work with the broadest range of member suppliers to research and coordinate methods for component manufacturing cost reduction – including whole life cycle costing and value engineering.
- Investigate, develop and transfer know-how from other industries such as aero and automotive.
- Co-ordinate the sharing of technology between member companies.
- Further develop the lobbying of regional and national government re all barriers and the "joined up" maximum use of government influence, direct or indirect to resolve them.
- Research & Lobby to establish demonstrator projects
- Research & Lobby on possibilities for capital investment for the supplier marketplace
- Develop all funding sources including the RDAs; Carbon Trust, DTI

Barriers to market entry, from table working groups

- OEM procurement policy that has strong existing supply chains and often nationalistic OEMs
- Difficulty in identifying who to talk to within OEMs – and encouraging them to talk to potential new suppliers
- Identifying existing OEM problems/drivers such as lack of core confidence in UK suppliers, with UK perceived as high cost/low quality
- Need to identify UK technical expertise including in universities and other R&D organisations
- Weak networking between OEMs & suppliers
- European regulations & standards that impact on suppliers and the lack of UK based certification and testing
- UK supplier capacity, financial strength – with UK manufacturing generally diminishing – need for a "bail out" fund – problems in providing required warranties
- Lack of wind energy skills in the UK

- UK industrial cycle is conservative
- Slow pace of renewables development in the UK
- Absence of UK/regional demonstrator projects
- UK does not use its national or regional government policy to its supplier benefit
- Lack of “joined up” development in renewables generally
- General lack of understanding of the key issues of climate change, renewables and sustainable development across the whole UK population
- Planning problems
- MOD radar objections

8.30: A novel recycling solution for incinerated bone ash

WRE Services Ltd & Akristos

A good news case study from the BCSD-UK/MEBC National Industrial Symbiosis Programme – West Midlands

NISP has identified a novel solution for the reuse of incinerated bone ash generated by one of the programme’s members, WRE Services Ltd. This firm is a leading specialist incineration business and is under contract to the Rural Payments Agency to provide disposal to cattle culled under the Government’s Over Thirty Months scheme. The company operates two sites, based in Nottingham and Shropshire. Each site operates under an authorisation granted by the Environment Agency and has a rigorous environmental monitoring regime. Currently the company sends over 1000 tonnes of waste incinerated bone to landfill. This incinerated bone is predominantly Calcium based salt which NISP has determined can be reused to the manufacture of building bricks.

Staffordshire based company Akristos has already undertaken a pilot study to investigate the potential of this material and the results are very encouraging. Following laboratory trials a full plant assessment will take place in the near future. If these trials are successful there is enormous potential to divert similar waste streams into this operation from other waste producers across the UK. The result will be to divert large quantities of materials away from landfill and reuse the cost base of a number of businesses, both in terms of avoiding landfill and by substituting raw material input.

This idea arose from the two companies meeting during one of the NISP training workshops.

8.31: Reuse of uncontaminated clay fill, Use of Exemption 9, and Observations on Environment Agency

WSP Support to BCSD Waste Reduction Initiative

BCSD-UK member

1. Sustainable Development Argument

WSP Environmental (WSPE) are currently involved in a project looking at the reuse of uncontaminated clay fill material which is not required on one site owned by a residential developer, but which is required on another site they are currently developing. The Agency currently considers the re-use of the fill material as a waste management process that should require the adoption of the appropriate regulatory regime. The discussions currently being held relate to a number of issues; these are as set-out below:

- the donor site material meets the specification for clean clay suitable for use in a variety of engineering applications;
- the receiver site has a requirement for clean clay/fill with a suitable engineering specification to allow for appropriate foundations to be constructed for housing purposes;
- the nearest exempt sites/inert landfill sites to the donor site are at a significantly greater distance than the proposed receiver site.

Arguments currently being developed to avert the need for exemptions (which would not necessarily work in this instance if taken to the letter of the law) include:

- reduction in the unacceptable disposal of a high specification engineering fill material which would, under the current definitions, be classified as “waste”;

- mitigation of the need for the extraction of virgin engineering fill material;
- reduction in the costs and environmental impacts associated with transport as the nearest landfill/exempt site is at a greater distance than the receiver site.

In summary, we feel that our proposed approach represents the best practicable, environmental and sustainable, option.

Current signs from the EA are encouraging, but they remain non-committal. However, there is a possibility that even if the EA decide not to accept our commonsense arguments, we may be able to legitimately argue the application of exemption 19 based upon our experience on another project. A final answer on this is hoped by mid-June; we will of course update you in due course.

2. Use of Exemption 9 – “ecological improvement”

WSPE have been successful in negotiating the issue relating to reclamation and ecological improvement with respect to one of our sites where exemption 9 would not normally have passed the EA. Our argument was that gardens within the proposed development constituted “ecological improvement” thereby opening up the use of exemption 9 to help in the development of a major residential scheme. Initially we had managed to argue this for areas of Public Open Space on the site, but then decided that it may be worth attempting to apply this approach to the garden areas as well. WSPE have now established a good working relationship and rapport with the EA officer responsible for that site. The works are currently on-going, and we are in the course of discussing the use of other exemptions on the site which, at this point in time, the EA appear to be supportive of our proposals.

3. Exemption 19 – “relevant work”

WSPE have managed to extricate agreement from the EA that “relevant work” under exemption 19 will allow for the use of materials which are suitable for use under areas of hardstanding and below buildings on a residential site. Our argument was based upon the fact that the site already had planning for raising the site levels prior to development and that we would be required to import fill materials for such engineering purposes. Through the use of quantitative risk assessment (QRA), we have managed to demonstrably prove that the materials which were available on site would fall into the suitable for use category

and, as such, we have been able to reduce both the volumes of material required to be disposed of off-site, whilst at the same time, reducing the volumes of imported fill needed to raise site levels. The majority of site arisings have been replaced within areas of hardstanding and only those materials which are surplus to requirements will be removed. Clean imported fill is to be brought in for emplacement within garden areas. Overall this pragmatic approach has provided a significant saving for the client.

4. General Observations on Environment Agency

As we discussed at our meeting, we have observed a number of common issues which tend to recur through our involvement in this type of work. These are briefly summarised below:

Inconsistent approach – what is deemed to be an acceptable use of an exemption, or an interpretation of the statute in one area, may not necessarily be agreed by another region.

Indecisiveness – we perceive that there is a lack of willingness for Agency officers to apply commonsense to situations which the current Regulations were clearly not intended to control. It is our perception that this may be as a result of a lack of experience and management talent within the Environment Agency.

Lack of awareness of general principles of sustainability – a number of the solutions that we have proposed have considered wider environmental and sustainability arguments (e.g. numbers of lorry movements required to export and import materials). There appears to be little or no appreciation of significance of such issues at a “Grassroots” level.

Commercial naivety – whilst it is not the Agency’s role to consider the commercial aspects of a given approach, there is often a complete lack of awareness of the commercial aspects of their actions and decisions which can render sites commercially unviable and hence undevelopable. This can lead to the prolongation of potential environmental impairment as sites continue to remain in a derelict and contaminated condition.

5. Integration of Industrial Symbiosis

As discussed, an Industrial Symbiosis (IS) programme is proposed by the North West Devon Economic Partnership in their (draft) Vision and Strategy as a step change project to stimulate the SME sector in the area. They see IS as an opportunity to:

- promote networking and knowledge sharing between businesses that would improve the competitiveness of business in North West Devon;
- develop a more environmentally sustainable way of doing business that eases pressure on landfill capacity and reduces demand for incineration;
- link local businesses to a nationwide network via NISP;
- build robustness into utility supply;
- create new business opportunity in renewable energy and environmental technologies;
- support the development of an Internet portal as a virtual market place for materials exchange, disseminating ideas and promoting North Devon;
- promote learning.

NWDEP firmly believe that the environment in North West Devon should be their "principle economic driver" and the proposed IS programme is part of a wider framework of projects that NWDEP want to pursue that together provide an new approach to doing business in the area; IS is a practical way of putting the environment central to economic development.

Key to the success of IS is the joined-up thinking between public and private organisations and a focus on a long term vision. Sub regional economic partnerships do both these things. NWDEP currently includes membership of Chamber of Commerce, Enterprise Agency, Local Authorities, Business Link, Skills Council, Marketing Bureau, Private Sector organisations and Voluntary Sector. The long term vision is important as it helps people avoid getting distracted by perceived short term administrative barriers and instead focus on trying to find solutions to achieve long term environmental and other regeneration objectives.

North West Devon are exploring opportunities to improve the region's ability to achieve its regeneration objectives by joining up these groups into one major company which manages all of these delivery agencies. This would give the group more joined-up and effective delivery capability. We feel that this is an inspired approach, but one that is essential to achieve "doing things differently" and will give initiatives like IS a better chance of delivering genuine benefit to the region.

It should be stressed that the NW Devon initiatives are in draft and will now undergo extensive consultation prior to implementation.